

No.

9800244



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

*Nobartis Seeds, Inc.*

Whereas, THERE HAS BEEN PRESENTED TO THE

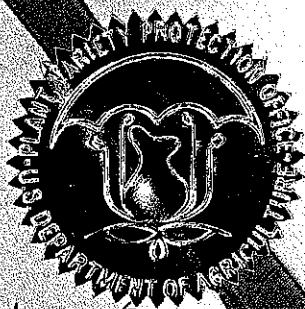
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLACEMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR PROPAGATING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'S22-C3'



*In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-seventh day of October, in the year of our Lord two thousand.*

Attest:

*[Signature]*

Acting Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*[Signature]*

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Novartis Seeds, Inc.		X9722	S22-C3
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)		5. TELEPHONE (include area code)	FOR OFFICIAL USE ONLY PVPO NUMBER 9800244 DATE 5/05/98
P.O. Box 959 Minneapolis, MN 55440		612-593-7333	
7. GENUS AND SPECIES NAME		8. FAMILY NAME (Botanical)	FILING DATE 5/05/98 FILING DATE 4 May 1998
Glycine max		Leguminosae	
9. CROP KIND NAME (Common name)		CERTIFICATION FEE:	
Soybean		FEE \$ 2450	
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)		DATE 5/5/98	
Corporation		CERTIFICATION FEE:	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		DATE	
Delaware		DATE	
12. DATE OF INCORPORATION		DATE	
1976		DATE	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS		14. TELEPHONE (include area code)	
John C. Thorne Novartis Seeds, Inc. P.O. Box 949 Washington, Iowa 52353		319-653-2181	
		15. FAX (include area code)	
		319-653-4609	
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
<input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository) <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act)			
<input type="checkbox"/> YES If "yes," answer items 18 and 19 below <input checked="" type="checkbox"/> NO If "no," go to item 20			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?	
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?			
<input type="checkbox"/> YES If "yes," give names of countries and dates <input checked="" type="checkbox"/> NO			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.			
The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.			
Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s))		SIGNATURE OF APPLICANT (Owner(s))	
John C. Thorne			
NAME (Please print or type)		NAME (Please print or type)	
John C. Thorne			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Director, Soybean Breeding	5-1-98		

## EXHIBIT A

### Origin and Breeding History of the Variety

The soybean variety 'S22-C3' is derived from a single F6 plant from the cross 'S 33-32' x 'S 19-90'. S 33-32 and S 19-90 are both commercial varieties marketed by Novartis Seeds, Inc. (formerly Northrup King). The cross was made in the summer of 1990 at the Novartis Research Center at Washington, IA. The F1 and F2 generations were grown at the Novartis Research Center at Kekaha, Kauai, HI in the winter of 1990-91; the F3 at Washington, in the summer of 1991; the F4 and F5 at Kekaha the winter of 1991-92; and the F6 at the Novartis Research Center at St. Joseph, IL, in the summer of 1992. The F1 was bulk harvested. The F2 through F6 generations were advanced by harvesting 2-4 seeds per plant and planting 600 seed from the resulting bulk. Individual F6 plants were harvested and threshed individually. The seed from each of these plants were planted in preliminary yield trial at St. Joseph in 1993. One of these, numbered J236723, was selected based on early Group 2 maturity and favorable agronomic characteristics for further testing. This line was subsequently tested under the temporary designation X9722 and named S22-C3. It has been tested at several northern cornbelt locations in the U.S. and in Ontario from 1994 through 1997 and found to yield well compared to other early Group 2 varieties. Descriptive characteristics including light tawny pubescence, tan pods, and brown hilum (may contain up to 2% other hilum) have been identified and confirmed. The original selection (J236723) was heterogeneous for flower color. In the summer of 1995, 135 single plant selections were grown at Washington, and 45 rows with uniform white flower color and J236723 phenotype were harvested and bulked to produce Pedigree Seed. S22-C3 has been tested in the field for iron deficiency chlorosis and found to have an intermediate reaction. It has been tested for reaction to Races 1, 3, 4, and 7 of *Phytophthora sojae* using hypocotyl inoculation of greenhouse grown plants and found to carry the Rps1-c gene (from S 19-90) and the Rps3 gene (from S 33-32) for resistance.

The Pedigree Seed of S22-C3 produced in 1995 was planted near Washington, IA in 1996 to produce Breeder Seed. The increase block was rogued carefully during flowering and at maturity and found to be uniform.

Foundation Seed of S22-C3 was produced in 1997 from the 1996 Breeder Seed. The Iowa Crop Improvement Association inspected the fields and found them to meet the standards for Foundation Seed.

S22-C3 is stable and uniform within a purity level of 99% (98% for hilum color). Over four years of testing and three cycles of seed increase, we have observed no variants other than the flower color heterogeneity in the original selection described previously. Any off-type plants removed from increase fields were assumed to have arisen from admixture or outcrossing. Varietal purity will be maintained using progeny rows as described previously as needed for the life of the variety.

9800244

## EXHIBIT B

### Novelty Statement for the Variety

S22-C3 is most similar to S 20-91. It can be differentiated from S 20-91 on the basis of pubescence color, flower color, and hilum color. S22-C3 has light tawny pubescence, white flowers, and seeds with brown hila, while S 20-91 has purple flowers, tawny pubescence, and seeds with gray hila.

17 MAY 23 1993  
28 MAY 23 1993  
0207 MAY 23 1993  
0101 MAY 23 1993

U.S. DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL MARKETING SERVICE  
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION  
 PLANT VARIETY PROTECTION OFFICE  
 BELTSVILLE, MARYLAND 20705

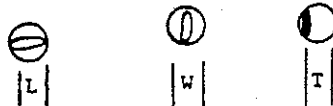
EXHIBIT C  
 (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY  
 SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Novartis Seeds, Inc.	TEMPORARY DESIGNATION	VARIETY NAME S22-C3
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) P.O. Box 959 Minneapolis, MN 55440		FOR OFFICIAL USE ONLY PVPO NUMBER 9800244

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,   ).

## 1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = &lt; 1.2)

3 = Elongate (L/T ratio &gt; 1.2; T/W = &lt; 1.2)

2 = Spherical Flattened (L/W ratio &gt; 1.2; L/T ratio = &lt; 1.2)

4 = Elongate Flattened (L/T ratio &gt; 1.2; T/W &gt; 1.2)

## 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) \_\_\_\_\_

## 3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

## 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

## 5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) \_\_\_\_\_

## 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

## 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

## 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1<sup>a</sup>)2 = Type B (SP1<sup>b</sup>)

## 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

## 10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) \_\_\_\_\_

## 11. LEAFLET SIZE:

☒ 11 = Small ('Amsoy 71'; 'A5312')  
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

## 12. LEAF COLOR:

☒ 21 = Light Green ('Weber'; 'York')  
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

## 13. FLOWER COLOR:

☒ 1

1 = White

2 = Purple

3 = White with purple throat

## 14. POD COLOR:

☒ 1

1 = Tan

2 = Brown

3 = Black

## 15. PLANT PUBESCENCE COLOR:

☐

1 = Gray

2 = Brown (Tawny)

Light Tawny

## 16. PLANT TYPES:

☒ 11 = Slender ('Essex'; 'Amsoy 71')  
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

## 17. PLANT HABIT:

☒ 3

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

## 18. MATURITY GROUP:

☐ 5

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

## BACTERIAL DISEASES:

☐Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)☐Bacterial Blight (*Pseudomonas glycinea*)☐Wildfire (*Pseudomonas tabaci*)

## FUNGAL DISEASES:

☒ 1Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)☐

Race 1

☐

Race 2

☐

Race 3

☐

Race 4

☐

Race 5

☐

Other (Specify)

☐Target Spot (*Corynespora cassiicola*)☐Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐Powdery Mildew (*Microsphaera diffusa*)☒ 1Brown Stem Rot (*Cephalosporium gregatum*)

Moderate Field Tolerance

☐Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

## FUNGAL DISEASES: (Continued)

☐ Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)  
☐ Purple Seed Stain (*Cercospora kikuchii*)  
☐ Rhizoctonia Root Rot (*Rhizoctonia solani*)  
 Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)  
☒ Race 1   ☒ Race 2   ☒ Race 3   ☒ Race 4   ☐ Race 5   ☐ Race 6   ☒ Race 7  
☐ Race 8   ☐ Race 9   ☐ Other (Specify) \_\_\_\_\_

## VIRAL DISEASES:

☐ Bud Blight (Tobacco Ringspot Virus)  
☐ Yellow Mosaic (Bean Yellow Mosaic Virus)  
☐ Cowpea Mosaic (Cowpea Chlorotic Virus)  
☐ Pod Mottle (Bean Pod Mottle Virus)  
☐ Seed Mottle (Soybean Mosaic Virus)

## NEMATODE DISEASES:

Soybean Cyst Nematode (*Heterodera glycines*)  
☐ Race 1   ☐ Race 2   ☐ Race 3   ☐ Race 4   ☐ Other (Specify) \_\_\_\_\_  
☐ Lance Nematode (*Hoplolaimus Colombus*)  
☐ Southern Root Knot Nematode (*Meloidogyne incognita*)  
☐ Northern Root Knot Nematode (*Meloidogyne Hapla*)  
☐ Peanut Root Knot Nematode (*Meloidogyne arenaria*)  
☐ Reniform Nematode (*Rotylenchulus reniformis*)  
☐ OTHER DISEASE NOT ON FORM (Specify): \_\_\_\_\_

## 20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☒ Iron Chlorosis on Calcareous Soil   Intermediate reaction  
☐ Other (Specify) \_\_\_\_\_

## 21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☐ Mexican Bean Beetle (*Epilachna varivestis*)  
☐ Potato Leaf Hopper (*Empoasca fabae*)  
☐ Other (Specify) \_\_\_\_\_

## 22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	S19-90	Seed Coat Luster	S20-91
Leaf Shape	S20-91	Seed Size	S20-91
Leaf Color	S20-91	Seed Shape	S20-91
Leaf Size	S20-91	Seedling Pigmentation	S33-32

9800244

## 23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
Submitted	130	2.2	79	9	6	41.8	21.4	19.8	
S20-91 Name of Similar Variety	129	2.7	90	10	6	41.6	21.0	19.3	

## PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A<sub>2</sub> in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

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11200-77-1-100  
DEPT. OF AGRICULTURE



U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICEEXHIBIT E  
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

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1. NAME OF APPLICANT(S)

Novartis Seeds, Inc.

2. TEMPORARY DESIGNATION  
OR EXPERIMENTAL NUMBER

X9722

3. VARIETY NAME

S22-C3

4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)

P. O. Box 959  
Minneapolis, MN 55440

5. TELEPHONE (include area code)

612-593-7333

6. FAX (include area code)

612-593-7801

7. PVPO NUMBER

9809244

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain.

☒ YES☐ NO9. Is the applicant (individual or company) a U.S. national or U.S. based company?  
If no, give name of country☒ YES☐ NO10. Is the applicant the original owner? ☐ YES ☐ NO If no, please answer the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

☒ YES☐ NO If no, give name of country

b. If original rights to variety were owned by a company, is the original owner(s) a U.S. based company?

☐ YES☐ NO If no, give name of country

11. Additional explanation on ownership (If needed, use reverse for extra space):

## PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.